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ABSTRACT

Differences between metaphors and similes have often been overlooked in the experimental literature, and the comparison theory addressing comprehension of simile may be less appropriate to the more transformational properties of metaphor. It is proposed that one of the variables associated with the difference is affective response, leading to the hypothesis that the metaphor's greater power to unsettle a subject's view will be accompanied by a higher incidence of affective responses. A first test of this hypothesis was made using 54 fourth and fifth grade children and 70 college students. The data from the children were in agreement with the hypothesis--they generated a higher frequency of affective responses to metaphors than to similes. The adult data, however, were inconclusive, showing a slight trend in the opposite direction. A second experiment with 33 college students investigated the degree of affective shift in response to metaphors, similes, or literal paraphrases in a story. Results showed greater affective shift in the simile condition than in either the metaphor or literal conditions. The findings suggest that, in contrast to children, depth of affective processing rather than frequency of affective ideas may be a key factor in adult figurative response. (Author/FL)

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Technical Report No. 301

AFFECTIVE IMPLICATIONS OF METAPHOR AND SIMILE IN DISCOURSE

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Abstract

Differences between metaphors and similes have often been overlooked in the experimental literature. The comparison theory that is applied to explaining comprehension of simile may be less appropriate to the more transformational properties of metaphor. It is proposed that one of the variables associated with the difference is affective response, leading to the hypothesis that metaphor's greater power to unsettle a subject's view of its topic will be accompanied by a higher incidence of affective responses. A first test of this hypothesis was made using children and young adult subjects. The data from the children were in agreement with the hypothesis: 4th and 5th grade subjects generated a higher frequency of affective responses to metaphors than to similes; but the adult data were inconclusive, showing a slight trend in the opposite direction. A second experiment with adult subjects investigated the degree of affective shift in response to metaphors, similes, or literal paraphrases in a story. A greater degree of affective shift was found in the simile condition than in either the metaphor or the literal control conditions. It is suggested that, in contrast to children, depth of affective processing rather than frequency of affective ideas may be a key factor in adult figurative response.

Affective Implications of Metaphor and Simile in Discourse

The traditional view of metaphor is that it is an abbreviated simile, and that reconstructing the implied comparison is the main step in comprehending a metaphor. The Random House Dictionary of the English Language (1966), for example, notes that metaphor is "the application of a word or phrase to an object or concept which it does not literally denote, in order to suggest comparison with another object or concept." Many experimental studies of metaphor have been based on the assumption that, since metaphoricity depends on recognizing similarity, there is no essential difference between metaphors and similes. But metaphor, particularly in literary texts, appears to be used more frequently for transforming the hearer's view of its topic, while simile is employed for highlighting features of the topic that already exist. The role of metaphor may thus be to change a hearer's perspective on its topic.

A part of this more radical effect of a metaphor, we suggest, is that affective involvement is likely to be greater in the case of a metaphor than a simile. If a metaphor has the power to transform a hearer's perspective, the unsettling of the hearer's existing view of its topic will be accompanied by a higher incidence of affective responses. The variety of implications aroused by such a metaphor results in a richer

response, perhaps one of greater ambiguity or uncertainty: conflicting affects may be a part of such response.

For example, in the second scene of Macbeth the acccunt of the Scottish victory against the Norwegians is conveyed by the wounded soldier in a series of similes: "As two spent swimmers . . . Showed like a rebel's whore . . . Like valour's minion . . ." The certainty of Scottish power, in particular the power of Macbeth, is carried largely in the sense of assurance of these similes; the scene exceeds best expectations: fortune proved a whore by deserting the enemy side, and Macbeth was bold and victorious. By contrast, the uncertainty of Macbeth as he feels his way toward the crown is often expressed in metaphors: "why do you dress me/In borrowed robes?", "function/Is smothered in surmise . . .," "here, upon this bank and shoal of time . . ." Such metaphors contain a variety of implications, whereas the similes present one main meaning; also, the metaphors seem calculated to engage the hearer's affects at a deeper level than the similes. To respond to Macbeth's metaphors is to feel both sympathy at his perplexities and foreboding at his intentions. While we are not proposing an absolute division between metaphor and simile--certain similes may on occasion perform like metaphors--in general, similes seem to function as comparisons while metaphors depend on some more transformational process.

The view that metaphors are understood as implicit comparisons, however, has prevailed in recent experimental literature. Billow (1981), for example, remarks that "Stating a

ground of comparison" is evidence of "underlying metaphoric awareness." Malgady and Johnson (1980) see metaphoric meaning as "the overlap or intersection of the feature sets of the individual words." Miller (1979) claims that "Reconstruction of the implied comparison is a critical step in understanding a metaphor. . ." Many experimental designs that have made important contributions to the study of figurative language have been informed by similar views (Winner, Rosenstiel, & Gardner, 1976; Kogan, Connor, Gross, & Fava, 1980), but such findings may have more relevance to the understanding of simile or analogy than metaphor. Aspects of response to metaphor that are not amenable to the comparison view, including affect, may be escaping the notice of such investigations. If the experimenter is set to notice only the attribute that is shared by topic and vehicle, he disallows other responses of the subject that might suggest a richer response.

In Billow's (1975) developmental study, for example, which investigated metaphor from the perspective of Piaget's developmental stages, two types of metaphor interpretation were allowed on theoretical grounds, according to whether a metaphor is based on similarity or proportion. The similarity metaphor was described as comparing "two (or more) disparate objects (including feelings, ideas, etc.) on the basis of a shared attribute." The test metaphors in his study were considered to be satisfactorily understood if only one common attribute was

selected. But Billow's test procedure actually allowed for only one attribute, previously selected by him. This prevented him from crediting other responses which were appropriate to the metaphor as a process of thought beyond similarity or proportion.

A child called Andy (age 7.4) in this study was presented with the metaphor "A butterfly is a flying rainbow." At the second attempt he gave the response required by Billow: "It's colorful like a rainbow." (Note the overt simile in this response.) In reply to Billow's further Piagetian class-inclusion query whether there are more colorful things in the world or more butterflies, the child answered that butterflies are colorful and that people like colorful things, and added: "Butterflies aren't here too often <evidences confusion>." This response was not credited, since it failed to meet the Piagetian requirement of the experiment. As a result, the idea that butterflies "aren't here too often," which is appropriate to the metaphor in question, passed unnoticed. A rainbow is an evanescent, fleeting appearance: so too, for this child, are butterflies. His embarrassment over expressing this thought seems due to the constraints of the test procedure.

The limitation of the comparison view can be simply stated. Where a metaphor, as in the example quoted above, suggests some new attribute of the topic (butterfly), the pre-existing attributes which the vehicle (rainbow) shares with the topic (if any) do not constitute the basis on which the metaphor is comprehended; comparison cannot take place because there is

nothing to compare. What takes place instead in such circumstances is that an attribute of the vehicle (the evanescence of the rainbow) seems to transfer to the topic, requiring the creation of a new perspective on it. The result, in the case of a powerful metaphor, is to defamiliarize the topic and cause a tension; such tension is, of course, affectively arousing. With literary metaphors, in particular, further inferences may be generated from the new meaning created (Miall, 1977). This approach, we shall suggest, offers a better way to distinguish metaphors from similes. Metaphors tend to generate new meaning (what might be called the Creativity Thesis in metaphor studies; Miall, 1983); thus the creativity of metaphors would seem to be a cardinal concern for any theory of metaphor. Perhaps the missing factor in our understanding of the creativity of metaphor will prove to be affect.

It has been argued by Zajonc (1980) that cognitive research in general is overcommitted to the information processing model, to the neglect of affective and attitudinal components of thought. This might suggest that one limitation of metaphor theory in the cognitive tradition has been an undue reliance on semantic models of comprehension. Such theories depend heavily on subjects' cognitive understanding of figurative language (this is true even of such research as that of Verbrugge and McCarrell (1977), despite the authors' awareness that affective and imaginal types of response may be implicated). Thus, an

inadequacy of the various comparison theories mentioned above is that the difference between metaphor and simile is conceived only in terms of the directness or indirectness of the underlying comparison: that is, the availability of semantic features of topic and vehicle. An alternative way of conceptualizing the difference would be to extend the study to affective variables.

Taking into consideration the possible affective component of figurative response, it seemed probable to us that subjects would respond differently to a metaphor and simile of the same type, permitted a free choice of focus on exposure to the figure and conditions that allowed for affective responses. Since a metaphor unsettles the topic of the figure more strongly than an equivalent simile, it is less easily assimilated to existing knowledge; metaphor would therefore produce more affective and fewer perceptual types of response than simile. In order to test this view, the specific hypothesis was made that in the case of a figure about a character in a story, subjects receiving the metaphor would be more likely to look <u>into</u> the character to understand the meaning of the figure, whereas in the case of a simile subjects would look <u>at</u> the character for metonymic-type associations to understand the figure. This would incline subjects in the metaphor condition both to dwell for longer on the figure's immediate implications for the character than subjects in the simile condition, and at the same time to read into the character more of their own affective responses to the figure. In the first study to be reported, stories were designed

which were intended to be neutral with respect to their perceptual or affective implications: any differences in response could therefore be attributed to the different effects of the figures.

To test this hypothesis subjects drawn from different age-groups were used: children and young adults. Since the inferential powers of children interpreting figurative language have been little explored, in contrast to the extant studies of comprehension (such as Billow, 1981, or Winner, Rosensteil, & Gardner, 1976, mentioned above), it was felt that a comparison of the range and nature of inferences made by children and adults might be illuminating. It might be expected, for example, that children would be less ready to mention the intrinsic aspects of a character in a story than adults, and likely to dwell more on extrinsic, observable aspects, particularly behavior.

Direct measures of figurative comprehension were not designed to be a part of the study. Any observed differences in the types of inferences made, however, would reflect differing effects of metaphor or simile on comprehension. Since under normal conditions a metaphor or simile is embedded in an ongoing text, any differences obtained would also suggest the type of effect that different figures have on subsequent text processing (or in the re-evaluation of text already interpreted): metaphor and simile might direct a hearer's understanding or expectations in different ways.

Another implication of the argument about the affective aspect of metaphor which we have been making, is that one effect of the surprise (or defamiliarization: Miall, 1977) resulting from a metaphor would be a shift in the affective state being registered by the subject, from before the metaphor to the moment of its reception. The direction of such a shift would most likely be from the less arousing to the more arousing type of affect. A second study was therefore designed to gather measures of affective shift from adults, using a version of the circumplex model of affect developed by Russell (1980).

An assumption of this model is that affects are related by similarity and opposition: thus gladness and excitement are adjacent types of affect, but both are opposite to sadness. When a range of such affective-state terms were rated for similarity by Russell's subjects, the groupings that resulted tended to order the affects in a circular arrangement around the circumference of a circle. The shift to a different affect that is recorded by the receiver of a metaphor could thus be approximately quantified by its angle of deviation from an initial state using the circumplex model. It was hypothesized that metaphors, being more surprising than similes, would result in a greater affective shift; similes, in turn, would show a greater shift than a literal paraphrase.

Since we hoped to produce responses to figurative language as close as possible to the normal processes of discourse interpretation, both experiments in the present study made use of

story materials. In the first experiment the stories were devised by the first author; in the second, an adaptation of an Italian folk tale, The Priceless Cats was used.

Experiment 1

Method

The tests were administered to child and adult subjects. The children were 54 students (average age: 9.8 years) in fourth and fifth grade classes at an elementary school in Arlington Heights in Illinois. The adults were 70 students (average age: 19.0 years) enrolled either in a first year Rhetoric course or in a first year Educational Psychology course at the University of Illinois at Urbana-Champaign.

Four short unfinished stories about different characters were constructed, each terminating with a figure that could be presented either as a metaphor or as a simile. For instance, one story concerned Sam, a thief. The story described him entering and robbing a house whose owners are away when he hears voices coming towards the house. The last sentence of the story read either "Sam was a fly in a bottle," or "Sam was like a fly in a bottle." A third control condition was presented with the same stories but without the final figurative sentence. It was established by previous pilot studies that the materials, and the figures in particular, were readily comprehensible by children of the age to be tested, as well as by adults.

Subjects were randomly assigned to one of the three conditions. A test booklet containing a preliminary training story and four test stories was passed out to each subject, who then worked at his own pace through the material. The stories were presented in two different sequences as a counterbalancing measure. After subjects had read each story they were asked a series of questions. The key question for testing the hypothesis referred to the sentence preceding the figurative sentence and asked the subject to describe the character's situation at that moment (e.g., "Describe Sam's situation when he heard voices coming."). Most subjects wrote several lines in response to this question. The experimental session took about forty minutes to complete.

Results and Discussion

Answers to the key question were analyzed into constituent idea units, each of which was coded according to particular categories (with the assistance of impartial judges in the case of the adult responses). Most of the idea units fell into one of four main categories: those concerned with direct interpretations of the thoughts, the feelings, the behavior, or the situation of the character. For example, Sam might be described respectively as wondering who was coming, feeling frightened, running to the window, or as being trapped. Other types of response consisted of a retelling of some part of the story, either verbatim, or in a close paraphrase; or general comments about the traits or history of the character unconnected

with the immediate situation addressed by the key question. Both types of response were eliminated from the tabulation of idea units. The order of presentation of stories was found to have had no significant effect on the results.

In support of the hypothesis that metaphor involves greater affective arousal, it was found that the children tended to generate more responses in the feeling category under the metaphor condition than under the simile condition [see Table 1]. The difference between the two conditions was tested for significance using the Mann-Whitney test. The difference between metaphor and simile conditions on feeling idea units was significant beyond the 0.05 level. This was mainly due to differences on two of the stories, Pat ($p = 0.05$) and Bill ($p = 0.01$), although the difference on the other two stories showed a clear trend in the same direction. Between the metaphor and control conditions the difference was not significant ($p = 0.1$), although a significant difference ($p = 0.05$) was obtained on two of the stories. Between simile and control there were no significant differences. Thus it can be seen that in the case of responses involving feeling, children in the metaphor condition tended to produce significantly more inferences than those in either the control or simile conditions, whereas the simile and control conditions on this measure appeared to produce much the same pattern. Differences between the conditions on the other main idea units did not reach significance.

Insert Table 1 about here.

Adults, by contrast, tended to produce slightly more feeling responses in the simile condition than in the metaphor condition, which does not support the hypothesis (Table 1). The Mann-Whitney test applied to the adult feeling responses, however, showed the difference between metaphor and simile conditions on this response did not reach significance for any of the stories, nor were significant differences found between the other pairs of conditions. (Other idea units were also examined, but none yielded significant differences between the three conditions.) Although the trend with the adult subjects is thus in the opposite direction to that of the children, the trend itself is not significant.

Insert Table 2 about here.

It can be seen from Tables 1 and 2, where the mean responses for feeling and the mean responses summed across all idea units are shown, that the children were more fluent than the adults in generating idea units concerning feeling. Not only were adults less fluent, but those in the metaphor condition were slightly less fluent than those in the simile condition. The opposite trend was found among the children: those in the metaphor condition proved to be the most fluent in generating such ideas.

The expectation that metaphor involves more affective responses than simile is thus confirmed by the results from the children's data; it is not born out, however, by the results from the adult data. This unexpected finding may indicate a greater readiness by children to entertain affective ideas, and a corresponding lower availability of more abstract modes of interpretation. In line with this suggestion, the children were also somewhat more fluent than the adults in behavior idea units--although the difference does not reach statistical significance--but less fluent than the adults in the situation and thinking units. If children's responses to stories tend to be of a more concrete nature than those of adults, then the affects, as our results indicate, are a readily available part of that inferential repertoire. The affective implications of the situations described in our stories were immediately grasped and utilized by most of the nine and ten year old children in the study; in fact, feeling idea units were twice as common as any other single type of unit. This is in contrast to the adult data, where feeling units also predominated, but were only 1.5 times as common.

The lack of significant affective differences in the adult data suggested that another method of testing affective response with adults should be investigated. The method used in the first experiment taps only those components of response that can be readily verbalized. In the case of adults, in contrast to

children, affective responses may be only partly available to this mode of report. The circumplex model of affect was employed to test adult response to metaphors and similes because, while the affect points on the circle are identified by verbal labels, the shifts between them that it was used to measure are independent of verbal report. It was hoped in this way to gain a more direct measure of the affective response to figures in a story.

Experiment 2

Method

The subjects were 33 freshmen students enrolled in an Educational Psychology course at the University of Illinois at Urbana-Champaign (average age: 19.8).

A folk-tale, The Priceless Cats, translated from the Italian, was adapted to contain instances of figurative language at various points in the tale. Three such points were used to test the affective response to metaphors, similes, and literal paraphrases. The first point in the story, for example, in which two Venetian merchants are being described, in the metaphor version reads: "One was a fine merchant, but the other was a vulture." In the simile version the same passage reads: "One was a fine merchant, but the other was like a vulture." The literal paraphrase in the third version reads: "One was a fine merchant, but the other was a greedy man."

Half of the story was presented in a test booklet. The story was printed in sections on separate pages, in such a way

that the story was stopped just before each test metaphor, to request responses from the subject, then just after the metaphor, with a further request for responses. As three metaphors were being tested, the story was stopped in this way six times. The simile and literal versions were presented in the same form. At each such pause in the story the subject was first asked to write down briefly what image or picture he had in mind for the last sentence or two that he had just read. This request was made principally in order to have the subject dwell a little longer on his response to the story at that point, making it more likely that the response to the main question would be a considered one. The key question which followed asked the subject to "decide which feeling would be the most appropriate for somebody reading the last sentence or two." A circle of named affects was presented (see Figure 1), in which the subject was requested to check one of the named feelings or (if he preferred) one of the spaces between two feelings. Three checking positions for each feeling were allowed for gradations in intensity, according to whether the feeling was considered to be strong, medium, or slight.

Insert Figure 1 about here.

The affect circle was described to the subjects before the experiment. It was pointed out that adjacent affects were similar while affects on opposite sides of the circle were

opposite types of affect. After six sets of responses had been made, and the test booklet had been handed back to the experimenter, each subject was given the remainder of the story to take out of the test-room on a debriefing sheet. The test took about twenty minutes to complete.

Results and Discussion

The six affect points checked by each subject on the circle were compared. The distance between the points on the circle was taken to represent a measure of affective shift before and after each figure or paraphrase. This distance was measured in terms of the angle of shift around the circle, thus giving a series of nominal shift measurements at each of three points in the story for the three experimental groups. The mean degree of shift for each instance is shown in Table 3. For the first and second shifts, it will be seen that the mean difference between the simile and control responses is over 30 degrees in both cases, while the difference between the metaphor and control responses is much smaller. The third shift resulted in differences that are not consistent with the first two.

Insert Table 3 about here.

A wide variation in the degree of shift was found between subjects within each condition, running, in the case of one set of results, from 0 to 180 degrees. For this reason the

differences in magnitude of the shifts between conditions were examined by ranking. A Freidman Ranks Test of variance was carried out on each of the shifts (Friedman, 1937). Comparing the three conditions, the first set of shifts was found to be significant beyond the 0.1 level, but the second and third shifts did not reach significance on this test. The ratings for intensity did not show a consistent difference between conditions and were dropped from further analysis.

As in the adult data from Experiment 1, however, the expected direction of difference in the effects of metaphor and simile was contrary to the results obtained. Just as those in the simile condition in the first study produced a slightly larger (although non-significant) number of feeling units than those in the metaphor condition, similes in the second study were associated with a larger affective shift compared with metaphors. While this difference was, again, not significant, the difference between simile and control conditions on the first shift was large enough to be significant ($p < 0.05$), while a less significant ($p = 0.1$) difference was also found on the second shift. Thus it is simile, not metaphor, which appears to result in greater affective involvement. The consistency of the two sets of adult data on the affective measures is evident, although an explanation for it remains to be explored.

General Discussion

The unexpected findings on the affective implications of metaphors and similes for adults must also be reconciled with the

results of the children's data, which are in accord with the original hypothesis. Since this is a first, exploratory study, using indirect methods to examine the different effects of metaphors and similes in text, it is clear that too much reliance should not be placed on the results obtained. A replication of both studies, particularly with a wider age-range of child subjects, would help to establish the reliability of the differences found. It would also, presumably, help to determine the developmental course of changes in these responses.

In measuring affective response, ideational fluency in itself is not, of course, a direct indication of the quality of a subject's response to metaphors or similes. It will be remembered, however, that our concern in this study was not to elicit direct measures of comprehension, but rather to examine the influence that different figures might have on text processing. The ideas recorded by the subjects represent potential extensions of the story at the point where it breaks off. The findings suggest, for example, that according to the interest a writer wishes to create in his reader, a metaphor is more likely to arouse concern over the affective state of a character, while a simile tends to direct attention to a character's situational aspects. The fact that the children in our study were responsive to affective and other implications of metaphor also suggests that more use might be made of metaphors in educational texts, both for reading instruction and for

expository purposes. If metaphor produces greater affective arousal, a child reading a text containing metaphors is likely to become more involved with the text and to find it more memorable. Other recent studies have also pointed to significant gains in children's understanding or recall of material using metaphors and analogies (Pearson, et al., 1981; Vosniadou & Ortony, 1983). These conclusions are indicated by the pattern of the children's data in our study. The adult data are less conclusive.

But a tentative explanation for the adult pattern of response can be formulated on the basis of the written protocols from the second study. A few of the metaphor condition subjects showed that they were anticipating the affect of the ensuing metaphor, which narrowed the affective shift recorded by them for that metaphor. Three of the subjects on encountering the point before the second metaphor made predictions about what was about to happen next. Although the good merchant in the story has been trading successfully from one island to the next, and has now just arrived at a new harbour, one subject, for example, said there was "a sort of eerie feeling--foreshadowing?" Only one of the simile condition subjects mentioned, less specifically, that "something must happen."

It is possible that metaphor, in this way, increases textual cohesion for the subject. Thus, either at a point after an initial metaphor has begun to shape response, or retrospectively on encountering a new metaphor, the greater depth of processing which (we hypothesize) metaphor induces, enhances the connections

of a metaphor to other concepts and affective states activated by the story. The lower degree of affective shift of our subjects in the metaphor condition may be reflecting greater textual cohesion in their response, compared with those in the simile condition. The effect, if present, is a relatively small one, however, and should be further explored by means of a more rigorous set of measures.

Another possible explanation for our results is that adults receiving metaphors do indeed respond fully to their affective aspects, at a level beyond the fluent children of our first study, and that such an affective response takes place at a depth beyond that made to an equivalent simile. But the conditions under which the response must be described may militate against the accuracy of the description. An affective state in the adult, if it is due to reading into the story some degree of his own experience, may be elusive and hard to describe. It is more likely to suffer from a deficiency of appropriate words than other types of account. That the adult subjects were in general slightly less fluent in response to metaphor than to simile also tends to support this suggestion. Thus, subjects in the metaphor condition, compared with those in the simile condition, may have been unable to record as accurately or as fully their affective responses. No measure of the depth of affective response formed part of either study; nor is it easy to see how such a measure could be devised. The question demands further careful research.

In conclusion, while the present findings do not in themselves show a clear distinction between a comparison-type response and a transformational response (subjects were not, after all, asked to interpret the figures directly), the differences found among the children's pattern of responses suggest that the processing of the two figures may proceed in divergent directions. The finding on affect is consistent with our earlier suggestion that metaphor creates a more radical shift in the meaning of the topic in a figurative sentence. The receiver of the metaphor, finding his view of the character unsettled by the figure to a greater degree than is the case with the simile, resorts more to his affective responses to the metaphor in order to comprehend its meaning. This leads him in turn to focus for longer, relatively speaking, on the affective implications of the figure for the character.

The adult data, however, do not support this view, since in both experiments simile resulted in a slightly greater affective response than metaphor. This difference in response from children is puzzling, and at the moment we can only speculate about its causes. It is evident that the affective aspects of response to metaphors and similes requires further careful investigation. It may be that depth of affective processing in adults is one variable that will provide a way of distinguishing responses to the two figures.

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Table 1

Mean Scores of Feeling Idea Units

	Children	Adults
Metaphor	8.45[a]	5.48
Simile	5.33	6.39
Control	5.63	4.9

[a] metaphor/simile difference significant: $p < .05$;
metaphor/control difference: $p = .1$

Table 2

Totals of Mean Responses per Condition

Condition	Children	Adults
metaphor	16.65	12.69
simile	12.45	13.85
control	11.95	13.02
Total	41.05	39.56

Table 3

Experiment 3

Affect Shifts: Mean Shifts in Each Condition

Condition	Instances		
	1	2	3
metaphor	99	91	88
simile	127[a]	112[b]	48
control	90	75	80

[a] simile/control difference significant: $p < .05$

[b] simile/control difference: $p = .1$

FIGURE 1. AFFECT CIRCLE